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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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BLAKELY, SOKOKOFF, TAYLOR & ZAFMAN LLP
12400 Wilshire Boulevard, Seventh floor
Los Angeles, CA 90025

EXAMINER	
MEW, KEVIN D	
ART UNIT	PAPER NUMBER
2664	

DATE MAILED: 08/22/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/912,814	HAUMONTE ET AL.	
	Examiner	Art Unit	
	Kevin Mew	2664	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *24 July 2001*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-31* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-31* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *24 July 2001* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Detailed Action

Drawings

1. Figure 1 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

2. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

In particular, the abstract exceeds the maximum allowable length of 150 words. Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-3, 23-24, 26-27, 30-31 are rejected under 35 U.S.C. 102(b) as being anticipated by Ward et al. (USP 5,701,294).

Regarding claims 1, 31, Ward discloses system to perform a method of wirelessly transmitting between a base station and a plurality of users, the method comprising:

determining a transmission link quality between a user and the base station (monitors radio channel quality both on an uplink and on a downlink between a mobile station and a serving base station in order to optimize the voice quality for the measured conditions, see col. 3, lines 39-67);

assigning a class type to the user (combination type) based upon the transmission link quality (combination type is identified based on channel quality, see col. 3, lines 39-67); and

setting a channelization mode for transmission with the user (channel coding) based upon the class type (channel coding is adapted based on the combination type, see col. 3, lines 39-67).

Regarding claim 2, Ward discloses the method of claim 1, wherein the channelization mode determines a quantity of frequency spectrum (total user bit rate) allocated for transmission between the user and the base station (channel coding determines the total user bit rate in a cellular radio system, see col. 2, lines 33-38).

Regarding claim 3, Ward discloses the method of claim 2, wherein the quantity of frequency spectrum allocated (total user bit rate) is for the duration of a particular transmission time slot (user bit rate is associated with a particular time slot, see col. 9, Table II).

Regarding claim 23, Ward further discloses the method of claim 1, wherein the transmission link quality between the user and the base station is determined dynamically (see col. 3, lines 39-56).

Regarding claim 24, Ward further the method of claim 1, wherein the transmission link quality between the user and the base station is determined periodically (the system continuously monitors channel quality both on an uplink and on a downlink, see col. 3, lines 39-56).

Regarding claim 26, Ward further discloses the method of claim 1, wherein determining a transmission quality comprises estimating an SNR of signal transmission between the base station and the user (Carrier-to-Interference ratio C/I, see col. 5, lines 29-45).

Regarding claim 27, Ward further discloses the method of claim 1, wherein determining a transmission quality comprises estimating a PER of data transmitted between the base station and the user (Bit Error Rate, see col. 8, lines 24-49).

Regarding claim 30, Ward discloses a method of wirelessly transmitting from a base station to a plurality of users, the method comprising:

transmitting information from the base station to a subscriber unit (downlink transmission, see col. 3, lines 39-67);

receiving from the subscriber a transmission link quality between a user and the base station (monitors channel quality on an uplink, see col. 3, lines 39-67),

assigning a class type to the user (combination type) based upon the transmission link quality (combination type is identified based on channel quality, see col. 3, lines 39-67); and

setting a channelization mode for transmission with the user (channel coding) based upon the class type (channel coding is adapted based on the combination type, see col. 3, lines 39-67).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 4, 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ward et al. in view of Freeburg et al. (USP 5,134,615).

Regarding claim 4, Ward discloses all the aspects of the claimed invention set forth in the rejection of claim 2 above, except fails to explicitly show the method of claim 2, wherein the allocated frequency spectrum comprises contiguous frequency slots. However, Freeburg

discloses a TDMA system in which its frequency channels are contiguous (see col. 2, lines 11-28 and Fig. 2). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the dynamic user bit rate allocation of a TDMA system based on the channel quality of Ward with the teaching of contiguous frequency channels in Freeburg such that the frequency channels in Ward are contiguous. The motivation to do so is to provide a continuous range of frequency spectrum to support a greater flexibility in managing the number and type of different communication devices.

Regarding claim 7, Ward discloses all the aspects of the claimed invention set forth in the rejection of claim 2 above, except fails to explicitly show the method of claim 2, wherein the allocated frequency spectrum comprises non-contiguous frequency slots. However, Freeburg discloses a TDMA system in which its frequency channels are not contiguous (only channel 2, time slot 2, see col. 2, lines 11-28 and Fig. 2). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the dynamic user bit rate allocation of a TDMA system based on the channel quality of Ward with the teaching of non-contiguous frequency channels in Freeburg such that the frequency channels in Ward are not contiguous. The motivation to do so is to accommodate for communication devices that demand less data throughput.

5. Claims 5-6, 8-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ward et al. in view of Chen et al. (US Publication 2005/0059401).

Regarding claim 5, Ward discloses all the aspects of the claimed invention set forth in the rejection of claim 2 above, except fails to explicitly show the method of claim 4, wherein the frequency slots comprise multi-carrier signals. However, Chen discloses a TDMA system that can employ multi-carrier modulation technique (see paragraph 0016). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the dynamic user bit rate allocation of a TDMA system based on the channel quality of Ward with the teaching of using multi-carrier modulation in Chen such that the frequency channels of Ward utilizes multi-carrier modulation. The motivation to do so is to allow data transmission in multiple frequency bands in accordance with the system needs.

Regarding claim 6, Ward discloses all the aspects of the claimed invention set forth in the rejection of claim 2 above, except fails to explicitly show the method of claim 4, wherein the frequency slots comprise single carrier signals. However, Chen discloses a TDMA system that can employ single-carrier modulation technique (see paragraph 0016). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the dynamic user bit rate allocation of a TDMA system based on the channel quality of Ward with the teaching of using single-carrier modulation in Chen such that the frequency channels of Ward utilizes single-carrier modulation. The motivation to do so is to allow data transmission in a single frequency band in accordance with the system needs.

Regarding claim 8, Ward discloses all the aspects of the claimed invention set forth in the rejection of claim 7 above, except fails to explicitly show the method of claim 7, wherein the frequency slots comprise multi-carrier signals. However, Chen discloses a TDMA system that can employ multi-carrier modulation technique (see paragraph 0016). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the dynamic user bit rate allocation of a TDMA system based on the channel quality of Ward with the teaching of using multi-carrier modulation in Chen such that the frequency channels of Ward utilizes multi-carrier modulation. The motivation to do so is to allow data transmission in multiple frequency bands in accordance with the system needs.

Regarding claim 9, Ward discloses all the aspects of the claimed invention set forth in the rejection of claim 7 above, except fails to explicitly show the method of claim 7, wherein the frequency slots comprise single carrier signals. However, Chen discloses a TDMA system that can employ single-carrier modulation technique (see paragraph 0016). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the dynamic user bit rate allocation of a TDMA system based on the channel quality of Ward with the teaching of using single-carrier modulation in Chen such that the frequency channels of Ward utilizes single-carrier modulation. The motivation to do so is to allow data transmission in a single frequency band in accordance with the system needs.

6. Claims 10-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ward et al. in view of Gitlin et al. (USP 6,064,662).

Regarding claims 10, 22, Ward discloses all the aspects of the claimed invention set forth in the rejection of claim 1 above, except fails to explicitly show the method of claim 1, further comprising:

communicating the class type of the user to a MAC scheduler;

the MAC scheduler scheduling all transmission between the base station and the user by assigning transmission frequency slots and transmission time slots to the user, wherein a number of frequency slots assigned to the user per time slot is based on the class type of the user.

wherein the class type of each of the users determines a priority in the MAC scheduler assignment of predefined transmission frequency slots and transmission time slots to the users.

However, Gitlin discloses a method and system to schedule data transmission for users by assigning frequency bands on a time slot-by-slot basis, wherein the scheduling is based on the data speed demand of users and medium availability (see col. 4, lines 54-67 and col. 5, lines 1-13). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the dynamic user bit rate allocation of a TDMA system based on the channel quality of Ward with the teaching of scheduling data transmission for users based on the individual user needs and medium availability in Gitlin such that a scheduling mechanism (actual positioning/priority of the various speed users) will be used to allocate frequency and time slots to users which is based on the combination type, as disclosed in Ward, assigned to a user. The motivation to do so is to perform optimum frequency and time slots allocation based on the associated combination type associated with the user.

Regarding claim 11, the combined system of Ward and Gitlin discloses all the aspects of the claimed invention set forth in the rejection of claim 10 above, except fails to explicitly show the method of claim 10, wherein the number of frequency slots assigned to the user per time slot is further based on real-time system traffic load between the base station and the plurality of users. However, Freeburg discloses a different number of frequency channels can be dynamically allocated to mobile station per time slot (see col. 2, lines 11-44 and Fig. 2). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the dynamic user bit rate allocation of a TDMA system based on the channel quality of Ward with the teaching of assigning different number of frequency channels per time slot in Freeburg. The motivation to do so is to increase the flexibility in accommodating different TDMA devices and different data throughput requirements.

Regarding claim 12, the method of claim 10, wherein the number of frequency slots assigned to the user per time slot (total data rate) is further based on a quality of service associated with the user (based on the modulation service being applied to user, see col. 9, Table II).

Regarding claim 13, the combined system of Ward and Gitlin discloses all the aspects of the claimed invention set forth in the rejection of claim 10 above, except fails to explicitly show the method of claim 10, wherein the frequency slots comprise multi-carrier signals. However, Chen discloses a TDMA system that can employ multi-carrier modulation technique (see paragraph 0016). Therefore, it would have been obvious to one of ordinary skill in the art at the

time the invention was made to combine the dynamic user bit rate allocation of a TDMA system based on the channel quality of Ward with the teaching of using multi-carrier modulation in Chen such that the frequency channels of Ward utilizes multi-carrier modulation. The motivation to do so is to allow data transmission in multiple frequency bands in accordance with the system needs.

Regarding claim 14, the combined system of Ward and Gitlin discloses all the aspects of the claimed invention set forth in the rejection of claim 10 above, except fails to explicitly show the method of claim 10, wherein the frequency slots comprise single carrier signals. However, Chen discloses a TDMA system that can employ single-carrier modulation technique (see paragraph 0016). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the dynamic user bit rate allocation of a TDMA system based on the channel quality of Ward with the teaching of using single-carrier modulation in Chen such that the frequency channels of Ward utilizes single-carrier modulation. The motivation to do so is to allow data transmission in a single frequency band in accordance with the system needs.

Regarding claim 15, the combined system of Ward and Gitlin discloses all the aspects of the claimed invention set forth in the rejection of claim 10 above, except fails to explicitly show the method of claim 10, wherein the allocated frequency spectrum comprises contiguous frequency slots. However, Freeburg discloses a TDMA system in which its frequency channels are contiguous (see col. 2, lines 11-28 and Fig. 2). Therefore, it would have been obvious to one

of ordinary skill in the art at the time the invention was made to combine the dynamic user bit rate allocation of a TDMA system based on the channel quality of Ward with the teaching of contiguous frequency channels in Freeburg such that the frequency channels in Ward are contiguous. The motivation to do so is to provide a continuous range of frequency spectrum to support a greater flexibility in managing the number and type of different communication devices.

Regarding claim 16, the combined system of Ward and Gitlin discloses all the aspects of the claimed invention set forth in the rejection of claim 10 above, except fails to explicitly show the method of claim 10, wherein the allocated frequency spectrum comprises non-contiguous frequency slots. However, Freeburg discloses a TDMA system in which its frequency channels are not contiguous (only channel 2, time slot 2, see col. 2, lines 11-28 and Fig. 2). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the dynamic user bit rate allocation of a TDMA system based on the channel quality in Ward with the teaching of non-contiguous frequency channels in Freeburg such that the frequency channels in Ward are not contiguous. The motivation to do so is to accommodate for communication devices that demand less data throughput.

Regarding claim 17, the combined system of Ward and Gitlin discloses all the aspects of the claimed invention set forth in the rejection of claim 10 above. Gitlin further discloses the frequency slots are interleaved (see Figs. 5 and 6). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the dynamic user

bit rate allocation of a TDMA system based on the channel quality in Ward and Gitlin with the teaching of frequency slots interleaving in Gitlin such that the frequency slots are interleaved. The motivation to do so is to partition the transmission medium in frequency and time in order to maximize the spectral efficiency and to accommodate a wide range of user access rates.

Regarding claim 18, Ward further discloses the method of claim 10, wherein a maximum possible number of frequency slots assigned to the user per time slot (total data rate) is based on the class type of the user (based on combination type, see col. 9, Table II).

Regarding claim 19, Ward further discloses the method of claim 18, wherein the maximum possible number of frequency slots assigned to the user per time slot (total data rate) is further based on real-time system traffic load between the base station and the plurality of users (based on the channel quality estimation of each of the radio channels, see col. 10, lines 37-59).

Regarding claim 20, Ward further discloses the method of claim 18, wherein the maximum possible number of frequency slots assigned to the user per time slot (total data rate) is further based on a quality of service associated with the user (based on the modulation service being applied to user, see col. 9, Table II).

Regarding claim 21, Ward further discloses the method of claim 10, wherein predetermined frequency slots (total data rate) within predetermined time slots (time slots) are

allocated for transmission with users having a particular class type (combination type, see col. 9, Table II).

7. Claims 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ward et al. in view of Flynn (USP 5,870,685).

Regarding claim 25, Ward discloses all the aspects of the claimed invention set forth in the rejection of claim 1 above, except fails to explicitly show the method of claim l, wherein the transmission link quality between the user and the base station is determined when the user is powered up. However, Flynn discloses that when a mobile station is powered up, it will search control channels in order to find a control channel with good reception quality (see col. 2, lines 26-44). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the dynamic user bit rate allocation of a TDMA system based on the channel quality in Ward with the teaching of Flynn in determining channel link quality when the mobile station is powered up. The motivation to do so is for the mobile station to find the best radio channel upon powering up and remains tuned to this channel until the quality deteriorates.

8. Claims 28-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ward et al. in view of Chuah (USP 6,115,390).

Regarding claim 28, Ward discloses all the aspects of the claimed invention set forth in the rejection of claim 10 above, and each of the plurality of users are assigned a class type (see col. 9, Table II), except fails to explicitly show the method of claim 10, and the MAC assigns frequency slots to users having a common class type according to a round robin scheduling scheme. However, Chuah discloses a base station scheduler that schedules bandwidth to users based on a round-robin algorithm (see col. 30, lines 32-53). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the dynamic user bit rate allocation of a TDMA system based on the channel quality in Ward with the teaching of Chuah in scheduling bandwidths to users based on a round-robin algorithm. The motivation to do so is to provide a method to efficiently resolve conflicts between mobile users competing for the limited bandwidth available in a wireless network.

Regarding claim 29, Ward discloses all the aspects of the claimed invention set forth in the rejection of claim 10 above, and each of the plurality of users are assigned a class type (see col. 9, Table II), except fails to explicitly show the method of claim 10, and the MAC assigns frequency slots to users having different class types according to a round robin scheduling scheme. However, Chuah discloses a base station scheduler that schedules bandwidth to users based on a round-robin algorithm (see col. 30, lines 32-53). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the dynamic user bit rate allocation of a TDMA system based on the channel quality in Ward with

the teaching of Chuah in scheduling bandwidths to users based on a round-robin algorithm. The motivation to do so is to provide a method to efficiently resolve conflicts between mobile users competing for the limited bandwidth available in a wireless network.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

US Publication 2005/0169234 to Kilgore

US Patent 6,747,964 to Bender

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin Mew whose telephone number is 571-272-3141. The examiner can normally be reached on 9:00 am - 5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wellington Chin can be reached on 571-272-3134. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Ajit Patel
Primary Examiner

KDM
Art Unit 2664